

Application No. 09/884,614

Docket No. 1232-4725**IN THE CLAIMS:**

Please amend claims 1, 3, 6-8, 11-13, 18-20, 23, 32-34, and 40 as follows:

1. (Currently Amended) An image reading apparatus comprising:

an image reading unit ~~for scanning and reading~~ adapted to read an original image on a predetermined medium;

a transmission ~~[[means for]]~~ unit adapted to sequentially transmit ~~transmitting~~ image data of the original image read by said image reading unit to an external device;

a driver ~~for displacing~~ adapted to displace a relative position between the image and said image reading unit;

a monitoring unit adapted to monitor whether the external device can receive data; and

a controller ~~for, when image reading operation of said image reading unit suspends, displacing~~ adapted to suspend reading operation of said image reading unit when said monitoring unit detects that the external device cannot receive data during execution of reading operation of said image reading unit and control said driver to displace the relative position between the image and said image reading unit by said driver to a predetermined position before the suspended position of the image reading operation, and restarting then restart the reading operation of the same image from the predetermined position when said monitoring unit detects that the external device can receive data.

2. (Canceled)

3. (Currently Amended) The apparatus according to claim 2, wherein said

Application No. 09/884,614

Docket No. 1232-4725

monitoring [[means]] unit determines based on a signal from the external device whether the external device can receive data.

4. (Original) The apparatus according to claim 1, wherein the predetermined position is set in consideration of a distance by which acceleration of said driver ends and a moving speed becomes constant.

5. (Original) The apparatus according to claim 1, wherein the predetermined position includes a home position.

6. (Currently Amended) The apparatus according to claim 1 further comprising an area designation means for designating unit adapted to designate a desired image area on the predetermined medium, wherein said image reading unit scans and reads the image area of the predetermined medium designated by said area designation [[means]] unit.

7. (Currently Amended) The apparatus according to claim 6, wherein the predetermined position is set to a position before an image scan start position of the desired image area designated by said area designation [[means]] unit in consideration of a distance by which acceleration of said driver ends and a moving speed becomes constant until the relative position between the image and said image reading unit reaches the image scan start position of the desired image area.

8. (Currently Amended) The apparatus according to claim 7, wherein the predetermined position is changed depending on the image scan start position of the desired image area designated by said area designation [[means]] unit.

9.-10 (Canceled)

Application No. 09/884,614

Docket No. 1232-4725

11. (Currently Amended) The apparatus according to claim ~~[[9]]~~ 12, wherein said memory can successively store image data in an area where image data which have been transmitted to the external device are stored.

12. (Currently Amended) ~~The apparatus according to claim 10, wherein~~ An image reading apparatus comprising:

an image reading unit adapted to read an original image;

a driver adapted to displace a relative position between the original image and said image reading unit;

memory adapted to temporarily store image data of the original image read by said image reading unit;

a transmission unit adapted to sequentially transmit the image data stored in said memory to an external device;

a detection unit adapted to detect an available capacity of said memory;
and

a controller adapted to suspend reading operation of said image reading unit when said detection unit detects that the available capacity of said memory decreases to less than a predetermined capacity during execution of the reading operation of said image reading unit and control said driver to displace the relative position between the original image and said image reading unit to a predetermined position before the suspended position of the image reading operation

~~when reading operation of said image reading unit suspends, said controller waits until the available capacity of said memory increases, and then restart~~ reading operation of said

Application No. 09/884,614

Docket No. 1232-4725

~~image reading unit restarts~~ the same original image from the predetermined position when said detection unit detects that the available capacity of said memory increases.

13. (Currently Amended) The apparatus according to claim [[9]] 12 further comprising data discard ~~means for discarding~~ unit adapted to discard image data which have been stored in said memory by reading operation when the reading operation of said image reading unit suspends.

14. (Original) The apparatus according to claim 1, wherein said driver moves said image reading unit while said image reading unit scans and reads the image on the predetermined medium.

15. (Original) The apparatus according to claim 6, wherein said driver moves said image reading unit while said image reading unit scans and reads the image on the predetermined medium.

16. (Original) The apparatus according to claim 1, wherein the predetermined medium is illuminated to input optical information to said image reading unit, said image reading unit is fixed, and said driver changes an optical path of the optical information, thereby causing said image reading unit to scan and read the image on the predetermined medium.

17. (Original) The apparatus according to claim 6, wherein the predetermined medium is illuminated to input optical information to said image reading unit, said image reading unit is fixed, and said driver changes an optical path of the optical information, thereby causing said image reading unit to scan and read the desired image area of the predetermined medium.

18. (Currently Amended) The apparatus according to claim 1 further comprising notification ~~means for notifying~~ unit adapted to notify the external device of a suspension notification when reading operation of said image reading unit suspends.

Application No. 09/884,614

Docket No. 1232-4725

19. (Currently Amended) The apparatus according to claim 18, wherein said notification ~~[[means]]~~ unit notifies the external device of the suspension notification and a discard instruction of discarding image data which have been transmitted by image reading operation.

20. (Currently Amended) The apparatus according to claim 1 further comprising
a notification means for notifying unit adapted to notify the external device of a restart enable notification when reading operation of said image reading unit can restart.

21. (Original) The apparatus according to claim 1, wherein the predetermined medium includes a microfilm.

22. (Original) The apparatus according to claim 21 further comprises a display on which an image on the microfilm is projected, and said image reading unit scans and reads the image projected on said display.

23. (Currently Amended) An image reading method of ~~scanning and reading~~ [[the]] an original image by displacing a relative position between ~~[[an]] the original~~ image on a ~~predetermined medium~~ and an image reading unit by a driver, and sequentially transmitting image data of the original image read by the image reading unit to an external device, comprising:

the monitoring step of monitoring whether the external device can receive data;

the displacement step of, when image reading operation of the image reading unit suspends, suspending reading operation of said image reading unit when said monitoring setup detects that the external device cannot receive data during execution of reading operation of said image reading unit and displacing the relative position between the original image and the image

Application No. 09/884,614

Docket No. 1232-4725

reading unit to a predetermined position before the suspended position of the image reading operation ~~by the driver~~; and

the reading restart step of restarting the reading operation of the same image from the predetermined position displaced in the displacement step when said monitoring step detects that the external device can receive data.

24. (Canceled)

25. (Original) The method according to claim 24, wherein in the monitoring step, whether the external device can receive data is determined based on a signal from the external device.

26. (Original) The method according to claim 23, wherein the predetermined position is set in consideration of a distance by which acceleration of the driver ends and a moving speed becomes constant.

27. (Original) The method according to claim 23, wherein the predetermined position includes a home position.

28. (Original) The method according to claim 23, further comprising the designation step of designating desired image area of the predetermined medium, wherein the designated desired image area is read by the image reading unit, and the predetermined position is set to a position before an image scan start position of the desired image area designated in the designation step in consideration of a distance by which acceleration of the driver ends and a moving speed becomes constant until the relative position between the image and the image reading unit reaches the image scan start position of the desired image area.

29. (Original) The method according to claim 28, wherein the predetermined position is changed depending on the image scan start position of the desired image area

Application No. 09/884,614

Docket No. 1232-4725

designated in the designation step.

30.-31. (Canceled)

32. (Currently Amended) The method according to claim ~~[[30]]~~ 33, wherein in the storage step, image data can be successively stored in an area where image data which have been transmitted to the external device are stored.

33. (Currently Amended) ~~The method according to claim 31, wherein~~ An image reading method of reading an original image by displacing a relative position between the original image and an image reading unit by a driver, comprising:

the storage step of temporarily storing image data of the original image read by the image reading unit in memory;

the transmission step of sequentially transmitting the image data stored in the memory to an external device;

the detection step of detecting an available capacity of the memory;

the suspension step of suspending reading operation of the image reading unit when said detection step detects that the available capacity of the memory decreases to less than a predetermined capacity during execution of reading operation of said image reading unit;

the displacement step of displacing the relative position between the original image and the image reading unit to a predetermined position before the suspended position of the image reading operation; and

the reading restart step of in the reading restart step, when reading operation of the image reading unit suspends, the available capacity in the memory is waited to increase, then restarting the reading operation of the same original image reading unit restarts

Application No. 09/884,614

Docket No. 1232-4725

from the predetermined position displaced in the displacement step when said detection step detects that the available capacity of said memory increases.

34. (Currently Amended) The method according to claim ~~[[30]]~~ 33 further comprising the data discard step of discarding image data stored in the storage step by reading operation when the reading operation of the image reading unit suspends.

35. (Original) The method according to claim 23 further comprising the notification step of notifying the external device of a suspension notification when reading operation of the image reading unit suspends.

36. (Original) The method according to claim 35, wherein, in the notification step, a discard instruction of discarding image data transmitted by image reading operation is also notified to the external device.

37. (Original) The method according to claim 23 further comprising the notification step of notifying the external device of a restart enable notification when reading operation of the image reading unit can restart.

38. (Original) The method according to claim 23, wherein the predetermined medium includes a microfilm.

39. (Original) The method according to claim 38 further comprising the display step of projecting an image of the microfilm, wherein the image reading unit scans and reads the image projected in the display step.

40. (Currently Amended) A computer program product comprising:

a computer usable medium having computer readable program code means embodied in said medium ~~for scanning and reading~~ [[the]] an original image by displacing a relative position between ~~[[an]] the original image on a predetermined medium~~ and an image

Application No. 09/884,614

Docket No. 1232-4725

reading unit by a driver, and sequentially transmitting image data of the original image read by the image reading unit to an external device, said product including:

first computer readable program code means for monitoring whether the external device can receive data;

~~[[first]]~~ second computer readable program code means for, when image reading operation of the image reading unit suspends, suspending reading operation of said image reading unit when it is detected that the external device cannot receive data during execution of the reading operation of said image reading unit and displacing the relative position between the image and the image reading unit to a predetermined position before the suspended position of the image reading operation by the driver; and

~~second~~ third computer readable program code means for restarting the reading operation of the same image from the predetermined position when it is detected that the external device can receive data.

41. (New) A computer program product comprising:

a computer usable medium having computer readable program code means embodied in said medium for reading an original image by displacing a relative position between the original image and an image reading unit by a driver, said product including:

first computer readable program code means for temporarily storing image data of the original image read by the image reading unit in memory;

second computer readable program code means for sequentially transmitting the image data stored in the memory to an external device;

Application No. 09/884,614

Docket No. 1232-4725

third computer readable program code means for detecting an available capacity of the memory;

fourth computer readable program code means for suspending reading operation of the image reading unit when it is detected that the available capacity of the memory decreases to less than a predetermined capacity during execution of reading operation of said image reading unit;

fifth computer readable program code means for displacing the relative position between the original image and the image reading unit to a predetermined position before the suspended position of the image reading operation; and

sixth computer readable program code means for restarting the reading operation of the same original image from the predetermined position when it is detected that the available capacity of said memory increases.